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ABSTRACT

This study followed 10 Florida cohorts with different levels of education over a period of 3 years to determine outcomes of employment, continuing education status, level of public assistance, incarceration or probation status, and military assistance. Information for the study was derived from the Florida Education and Training Placement Information Program. Among the findings documented in six tables and associated graphs are the following: (1) at the end of 3 years the cohort groups most likely to be employed in Florida were those with community college certificates and associate degrees; (2) the cohort with the highest percentage of people in jail or on parole or probation were high school dropouts and those with only a high school diploma; (3) earnings for all cohorts increased by the end of the 3-year study period, with increase greatest for those with higher levels of education; (4) business degree majors earned more than English majors at both the bachelor and the masters level; (5) also, at all levels, health-related and engineering graduates averaged higher salaries than early childhood education and arts majors; and (6) the range of earnings was smaller among education majors than for those in health professions. Extensive discussion of the methodology employed is included. (CH)

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THE WHOLE PICTURE: FLORIDA'S EDUCATIONAL DELIVERY SYSTEM

A Longitudinal Study Comparing Outcomes by Educational Levels

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Paper presented at the 36TH Annual Forum of the Association for Institutional Research, Albuquerque, New Mexico, May 1996

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THE WHOLE PICTURE: FLORIDA'S EDUCATIONAL DELIVERY SYSTEM:
A Longitudinal Study Comparing Outcomes by Educational Levels

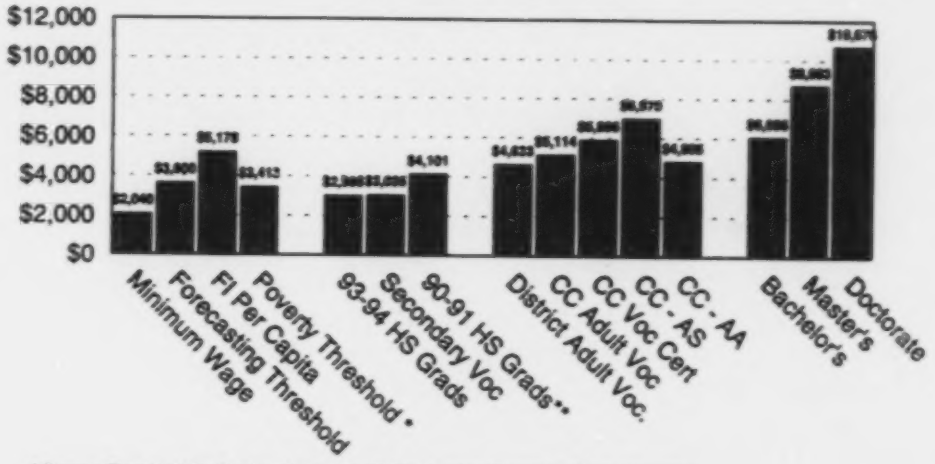
Introduction:

In addition to nine public universities (with a tenth soon opening), Florida's public system of postsecondary education includes 28 community colleges, offering Associate of Arts and Associate of Science degrees as well as certificated technical/vocational programs and vocational adult education training. Fifty-one postsecondary area technical centers in Florida are operated either by a school district or a community college (fourteen of the area centers are operated by community colleges, thirty-seven by school districts). Technical training at the secondary level is also available for students enrolled in high school.

With the increase in cost to attend college, and less funding of financial aid, it will most likely become more difficult for many people to attain university level degrees. What are recent Florida graduates of postsecondary education & training programs to expect in terms of employment and earnings? Since 1990-91, reports from the Florida Education and Training Placement Information Program (FETPIP) have found that graduates from Florida's associate of science degree programs have higher *initial* full time-full quarter earnings than do graduates from bachelor degree level programs. The report was based on a snapshot of outcomes for the October-December quarter following graduation. A full time-full quarter denotes those that were found employed for at least 12 weeks in the quarter and earning at least minimum wage ($2,040).

THE DATA THAT INITIATED THE STUDY

INITIAL QUARTERLY EARNINGS UPON COMPLETION
1993-94 Graduate/Completers Working Full Time
Oct.-Dec. 1994



* Poverty Threshold for Family of Four. ** HS Grads who did not continue education.

It's an age old American belief that the higher level of education, the higher the level of earnings. This finding has drawn the attention of various educational training providers, both public and private, especially within the community college and the university system. This study was undertaken to investigate FETPIP's initial findings and to examine the comparison of earnings over a longer period of time, beyond the snapshot taken soon after graduation.

This study followed 10 cohorts with different levels of education to determine their employment, continuing education status, level of public assistance (food stamps and AFDC), incarceration or probation status and for military enlistments. The study captured snapshots both initially following graduation/completion and again, after a period of three years.

Some of the questions asked were: In what proportion do students attend the various levels of education offered? How many graduates continue their education? How do the average earnings compare, by level of education and by field? Is there a significant change in earnings after a period of time? Do graduates stay in-state?

In trying to understand why A.S. graduates showed higher initial earnings than bachelor graduates we reasoned that A.S. graduates tend to be older, often returning to school after having been in the work force, while many bachelor degree students have entered college directly from high school. It is also hypothesized that perhaps the A.S. graduates were already working "in field" and needed the completion of the course work to qualify for promotions. Graduates at the bachelor's level are more likely to be starting in entry level positions with little experience. If the A. S. graduates receive specific training in specialty areas then, they would likely start out with higher wages.

This study was designed to perform a longitudinal followup of the graduates of various educational levels and compare their earnings and outcomes after a period of time had passed. The amount of increase in average earnings and the percent of increase brought by each level of education after the passing of three years was also analyzed.

Where did the information for this study originate? FETPIP is the acronym for the Florida Education and Training Placement Information Program. Outcome data is collected via electronic media from eight state and three federal agencies. By performing record linkages with these administrative data bases, information can be gathered that provides outcome data as to what happens to students after they complete a degree or a technical training program. The data for this study was

obtained through two report formats provided by FETPIP. The "Annual Aggregate Outcomes Report" provided summary statistics for each level of education during 1991 and then again in 1994, and an ad hoc university program specific outcomes report on 1990-91 graduates found during the fourth quarter of 1994 (October-December).

Methodology: Seven Steps

Step One: Select Cohort Groups:

Graduates were selected from the 1990-91 academic year. Cohorts were made up of the following public sectors: high school dropouts, high school graduates, completers of vocational certificates, community college adult vocational education, community college certificates, those with community college A.S. degrees, community college A.A. degrees, university bachelor degrees, university master's degrees, and university doctoral degrees.

The records used in the study were based on the universe of reported graduate records during the 1990-91 school year through the automated (yet separate) databases maintained by the Division of Public Schools, Community Colleges and Board of Regents. Only records having valid social security numbers were included, making up approximately 95% to 98% of all graduates from each level.

Steps Two and Three: Track Cohorts to 4th Quarter 1991 and to 4th Quarter 1994:

Cohorts were matched by social security numbers and names to the files from all the agencies available to FETPIP. The first followup "snapshot" was taken for the period of the fourth quarter (October through December) in 1991, and the second "snapshot" was taken based on the fourth quarter of 1994. The match criteria changed from 1991 to 1994, so some of the graduates who matched in 1991 did not match in 1994. An example of a person dropped from the cohort would be if the first three characters of their last name (for males only) was different from that reported in 1991 or their social security number appeared differently in the 1994 files than how they originally appeared in 1991. Records with social security numbers reported with more than one name in use within the Department of Labor's employment records were also deleted from study use.

Step Four: Run Annual Outcome Reports:

Data from the "Annual Aggregate Outcomes Report" shows the following possible outcomes:

Total unique persons
Total Found who were Employed (not necessarily full time) and Continuing Education
Total Found who were Continuing Education by not EmployedTotal Unique Persons
Total Found Employed in Florida
Total Found who were Working Full Quarter
Total Found who were Continuing Education
Total Receiving AFDC (Aid to Families with Dependent Children)
Total Receiving AFDC and Employed
Total Receiving Food Stamps
Total Receiving Food Stamps and Employed
Total Receiving AFDC and Food Stamps
Total Supervised by DOC (Department of Corrections- parole, probation)
Total Incarcerated by DOC
Total Matches with all Match Sources available
Average Earnings for those who worked Full Quarter at minimum wage or more.

Data for certain categories, such as public assistance, was not available in 1991, so longitudinal comparisons in these categories cannot be made at this time. Data was also collected from the "ad hoc university program specific outcomes report" for those completing a bachelor's, master's or doctoral degree.

The following information was selected for this study:

Number Who Graduated
Total Found Employed in Florida
Of those Employed, the number working Full Quarter
Average Full Quarter Earnings of those Employed Full Quarter
The Total Percent of Graduates With Match Data

Step Five: Create Charts and Graphs:

The following charts were created from the reports:
Table One: Follow Up on 1990-91 Cohorts by Level of Education at the End of Fourth Quarter, 1991
Table Two: Follow Up on 1990-91 Cohorts by Level of Education at the End of Fourth Quarter, 1994
Table Three: Comparison of 1990-91 Cohorts from the End of 1991 to the end of 1994
Table Four: Sample Listing of 1990-91 Graduates From Florida Public Universities with Valid SSNs, Comparison of Average Wages By Level Within the Same Program at the End of Fourth Quarter 1994
Table Five: Sample of 90-91 Graduates of Florida Public Universities Ranked by Average Earnings For Each Level at the end of Fourth Quarter 1994
Table Six: Sample of 90-91 Graduates of Florida Public Universities Ranked by Average Earnings By Level at the end of Fourth Quarter 1994, Comparison of Programs within Disciplines

Graphs Showing Comparisons are as Follows:
Initial Quarterly Earnings Upon Completion for 1993-94 Graduates/Completers
Percent of Florida Graduates Receiving Public Assistance in Florida
Percent of Florida Graduates Found Continuing Education in Florida
Percent of Florida Graduates Found Employed in Florida
Average Full Quarter Earnings for Florida Graduates Found Working in Florida
Increase in Average Full Quarter Earnings for Florida Graduates Found Working in Florida From 1991 to 1994
Percent Increase in Average Full Quarter Earnings for Florida Graduates Found Working in Florida From 1991 to 1994

STEP SIX: Analysis - What we found

Table One shows that at the end of fourth quarter 1991, immediately following graduation, FETPIP was able to match 70% to 90% of all the categories of cohorts except the high school drop outs (45.7%) and those with Doctoral degrees (39.2%). Possible explanations for their lower match rates would be that those with a higher level degree are more likely to migrate out of state with skills valued throughout the nation as

well as internationally. High school drop outs may not be found in the job market yet, or perhaps, may be in jobs not covered under unemployment insurance hence not identified as employed.

Table One
Follow Up on 1990-91 Cohorts by Level of Education at the end of Fourth Quarter, 1991

	DropOuts	HS Grads	VocCert	Adult Ed	CC-Cert	CC-AS	CC-AA	BachDeg	MastDeg	Doct Deg
Total Unique Persons	13,698	79,778	17,895	7,119	1,163	6,229	21,164	25,718	6,048	747
Total Found Employed in Florida	4,486	36,992	12,221	5,176	911	4,660	12,155	16,145	3,861	253
% Found Employed in Florida	32.70%	46.80%	68.20%	72.70%	78.30%	74.80%	57.40%	62.60%	63.80%	33.80%
Total Working Full Quarter	896	8,745	7,891	3,666	667	3,736	5,750	11,352	3,199	215
%Found, Working Full Quarter	19.90%	22.40%	62.90%	70.80%	75.40%	80.20%	47.30%	70.30%	82.80%	84.90%
Total Found Continuing Education	2,617	35,783	3,086	1,625	397	1,356	15,838	6,110	1,011	24
%Found, Continuing Education	19.10%	44.80%	17.20%	22.80%	34.10%	21.70%	74.80%	23.70%	16.70%	3.20%
Total Found Cont. Ed and Employed	869	18,639	2,195	1,258	312	1,052	9,175	3,880	641	18
Total Found Cont. Ed, Not Employed	1,748	17,144	891	367	85	304	6,663	2,220	370	6
Total Found Employed in Fed Govmt	10	124	118	32	14	122	120	424	202	38
Total Found Employed by Military	21	2,467	29	10	6	2	39	18	2	-
Total Matches with all Match Sources	6,263	58,203	13,231	5,573	1,012	5,078	18,950	18,763	4,423	293
%of Total with Match Data	45.70%	72.90%	73.90%	78.20%	87.00%	81.50%	89.50%	72.80%	73.10%	39.20%
Average Full Quarter Earnings	$ 3,349	$ 2,980	$ 4,585	$ 5,063	$ 5,974	$ 6,800	$ 4,656	$ 5,731	$ 8,086	$ 9,544

Table One (above) and the following graph indicate that the highest percent of cohorts found employed in Florida shortly after graduation were those who just completed adult education (72.7%), certificate programs at a community college (78.3%) and AS degrees (74.8%). Least likely to be found working in Florida were high school drop outs (32.7%) and those who completed a doctoral degree (33.8%).

PERCENT OF FLORIDA GRADUATES FOUND EMPLOYED IN FLORIDA
BY LEVEL OF EDUCATION (1990-91 COHORT)
AT THE END OF 4TH QUARTER 1991 AND THE END OF 4TH QUARTER 1994

	DROP OUT	HS GRAD	VOC CERT	ADULT ED	CC-CERT	CC-AS	CC-AA	BACH	MAST	DOCT
1991	32.7%	48.8%	68.2%	72.7%	78.3%	74.8%	57.4%	62.6%	63.8%	33.8%
1994	44.0%	54.4%	61.9%	66.5%	74.3%	67.6%	64.8%	58.1%	55.9%	28.5%

1991 1994

Table One shows that those most likely to be found continuing their education at the end of 1991 were the ones who completed an AA degree (74.8%).

Top ranking levels for the average earnings in the fourth quarter of 1991 were as follows: doctoral degrees ($9544), masters degrees ($8086), AS degrees ($6800), community college certificates ($5974), followed by bachelor degrees ($5731).

After tracking the cohort groups for three years, to the end of fourth quarter 1994, Table Two (next page) shows that the same cohort groups were most likely to be found employed in Florida: those with community college certificates (74.3%), AS degrees (67.6%), adult ed completers (66.5%), and AA degrees (64.8%).

Table Two
Follow Up on 1990-91 Cohorts by Level of Education at the end of Fourth Quarter, 1994

	DropOuts	HS Grads	VocCert	CC-Adult Ed	CC-Cert	CC-AS	CC-AA	BachDeg	MastDeg	Doct Deg
Total Unique Persons	13,542	79,341	17,727	7,054	1,161	6,205	21,098	25,718	6,048	747
Total Found Employed in Florida	5,980	43,176	10,989	4,701	863	4,200	13,675	14,957	3,382	213
% Found Employed in Florida	44.00%	54.40%	61.90%	66.50%	74.30%	67.60%	64.80%	58.10%	55.90%	28.50%
Total Working Full Quarter	2,489	23,645	8,401	3,719	737	3,578	10,443	12,471	2,934	185
%Found, Working Full Quarter	41.70%	54.70%	76.40%	79.10%	85.30%	85.10%	76.30%	83.30%	86.70%	86.80%
Total Found Continuing Education	1,095	27,254	2,104	1,193	403	1,003	6,274	3,723	800	20
%Found, Continuing Education	7.80%	34.30%	11.80%	16.80%	34.70%	16.10%	29.70%	14.40%	13.20%	2.60%
Total Found Cont. Ed and Employed	620	17,226	1,593	945	346	780	4,374	2,701	540	15
Total Found Cont. Ed, Not Employed	446	10,028	511	248	57	223	1,900	1,022	260	5
Total Found Employed in OPM	1	24	13	4	-	10	14	21	4	3
Total Found Employed in USPS	7	32	6	1	1	2	5	4	-	-
Total Found Employed by Military	35	319	12	5	1	4	21	8	-	-
Total Receiving AFDC	2,059	2,988	899	318	9	35	125	35	4	-
Total Receiving AFDC and Employed	718	1,411	405	151	5	13	65	17	1	-
Total Receiving Food Stamps	3,913	7,393	1,875	693	28	95	375	121	18	-
Total Rec. Food Stamps and Employed	1,672	4,053	957	359	14	49	200	67	4	-
Total Receiving AFDC & Food Stamps	1,976	2,832	826	297	9	29	110	25	2	-
%Found, Receiving Public Assistance	29.50%	9.40%	10.90%	9.60%	2.40%	1.60%	1.80%	0.50%	0.30%	0.00%
Total DOC Supervised	723	892	171	75	8	11	41	35	6	-
Total DOC Incarcerated	227	98	23	6	2	4	7	4	2	-
%Supervised	5.30%	1.10%	0.90%	1.00%	0.60%	0.10%	0.10%	0.10%	0.00%	0.00%
%Incarcerated	1.60%	0.10%	0.10%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Matches with all Match Sources	8,749	56,557	12,447	5,234	933	4,478	15,710	16,055	3,660	218
%of Total with Match Data	64.60%	71.20%	70.20%	74.00%	80.30%	72.10%	74.40%	62.40%	60.30%	29.10%
Average Full Quarter Earnings	$ 3,685	$ 3,884	$ 5,533	$ 5,854	$ 7,286	$ 8,016	$ 6,108	$ 7,707	$ 9,725	$ 11,568

Source: FETPIP, "656" report
Note: Data showing those receiving public assistance were not available in 1991.

The following graph shows that there was a decrease in the percent of graduates continuing their education in all groups except those who received a vocational certificate fromacommunity college, which stayed at about 34%.

The most noticeable decrease was for those with an AA degree. The percent continuing education dropped from 74.8% to 29.7%. The drop could be due to the completion of a bachelor's degree or it could indicate that they stopped or dropped out of school. It also indicates that three years following completion of an A.A. degree,

almost a third are still continuing their education. This could indicate that some need more than two years to complete their undergraduate degree following receipt of their A.A. degree, while others may have received their bachelor's degree and be working on their Masters' degree. The Florida Board of Regents (BOR) retention studies show that about 28% of the Fall 1990 AA transfers graduated the second year after they enrolled and 56.6% had graduated by the third year following transfer.

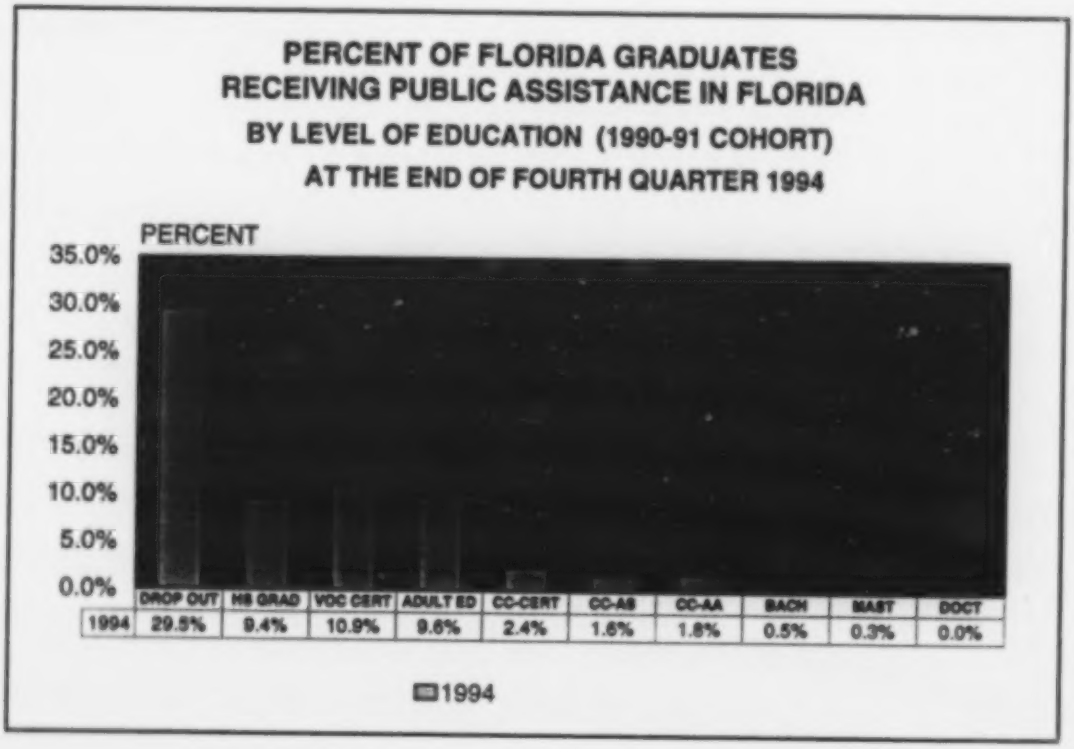
PERCENT OF FLORIDA GRADUATES FOUND CONTINUING EDUCATION IN FLORIDA

BY LEVEL OF EDUCATION (1990-91 COHORT)

AT THE END OF 4TH QUARTER 1991 AND THE END OF 4TH QUARTER 1994

	DROP OUT	HS GRAD	VOC CERT	ADULT ED	CC-CERT	CC-AS	CC-AA	BACH	MAST	DOCT
1991	19.1%	44.8%	17.2%	22.8%	34.1%	21.7%	74.8%	23.7%	16.7%	3.2%
1994	7.8%	34.3%	11.8%	16.8%	34.7%	16.1%	29.7%	14.4%	13.2%	2.6%

In 1994, information was collected on those receiving public assistance and those who were being monitored by the Department of Corrections (DOC) which was not available in 1991.



The above graph shows that as the level of education increased, the need for public assistance decreased. The data showed that high school drop outs were most prone to relying on Aid for Families with Dependent Children (AFDC) and/or food stamps (29.5%). Close to 10% of the high school graduates, almost 11% of the vocational certificate completers, and almost 10% of the community college adult ed completers received some type of public assistance.

In Table Two, the high school drop outs and those with only a high school diploma showed the highest numbers and percents of people incarcerated or under DOC supervision (parole or probation). The 950 (6.9%) high school drop outs and 990 (1.2%) high school graduates compare to .1% or fewer for those with an AA, AS, bachelors, masters, or doctoral degrees. This is strong evidence of the link between crime and incarceration and the lack of educational attainment.

Table Three, on the following page, compares the outcomes for 1991 and 1994. All categories increased in average fourth quarter earnings.

Two additonal graphs depict the relationships between the dollar increase and the percent of increase. It is not surprising that the amount of increase tended to be greater for those with higher levels of education. The rate of increase based on initial earnings in 1991, contrasted to those in 1994, was very high for high school graduates (31%), AA graduates (31%), and those with Bachelor degrees (34%). Those with an A.S. degree had an increase of only 18%, yet still outearned the bachelor recipient in total earnings.

The bachelor degree recipients are rapidly closing the earnings differential gap. It will be interesting to see if and when the bachelor graduates do equal or exceed the earnings of A.S. graduates. In 1991 the A.S. graduates average earnings were approximately $1,100 per quarter more than bachelors. By 1994 the A.S. graduate of 1991's average earnings was only found to be approximately $300 more per fourth quarter than 1991 bachelor recipients.

Table Three

Comparison of 1990-91 Cohorts At The End of 1991 To The End of 1994

	1991 DropOuts	1994 DropOuts	1991 HS Grads	1994 HS Grads	1991 VocCert	1994 VocCert	1991 CC-Adult Ed	1994 CC-Adult Ed	1991 CC-Cert	1994 CC-Cert
Total Unique Persons	13,688	13,542	79,778	79,341	17,895	17,727	7,119	7,084	1,163	1,161
Total Found Employed in Fla.	4,488	5,980	36,992	43,176	12,221	10,989	5,176	4,701	911	863
% Found Employed in Fla.	32.70%	44.00%	46.80%	54.40%	68.20%	61.90%	72.70%	66.50%	78.30%	74.30%
Total Working Full Quarter	895	2,469	8,745	23,845	7,891	8,401	3,868	3,719	687	737
% Found, Working Full Qtr.	19.90%	41.70%	22.40%	54.70%	62.90%	76.40%	70.80%	79.10%	75.40%	85.30%
Total Found Continuing Ed.	2,617	1,096	35,783	27,254	3,086	2,104	1,825	1,190	397	403
% Found, Continuing Ed.	19.10%	7.80%	44.80%	34.30%	17.20%	11.80%	22.80%	16.80%	34.10%	34.70%
Total Cont. Ed and Employed	899	620	18,639	17,226	2,195	1,593	1,258	945	312	346
Total Cont. Ed, Not Employed	1,748	446	17,144	10,028	891	511	367	246	85	57
Total Found Employed OPM	10	1	124	24	118	13	32	4	14	-
Total Found Empl. by Military	21	35	2,487	319	29	12	10	5	6	1
Tot Matches with all Sources	6,283	8,749	58,203	56,557	13,231	12,447	5,573	5,234	1,012	933
% of Total with Match Data	45.70%	64.60%	72.90%	71.20%	73.90%	70.20%	78.20%	74.00%	87.00%	80.30%
Avg Full Quarter Earnings	$ 3,349	$ 3,885	$ 2,980	$ 3,894	$ 4,585	$ 5,533	$ 5,083	$ 5,854	$ 5,974	$ 7,266

	1991 CC-AS	1994 CC-AS	1991 CC-AA	1994 CC-AA	1991 BachDeg	1994 BachDeg	1991 MastDeg	1994 MastDeg	1991 Doct Deg	1994 Doct Deg
Total Unique Persons	6,229	6,205	21,164	21,098	25,718	25,718	6,048	6,048	747	747
Total Found Employed in Fla.	4,660	4,200	12,155	13,675	16,145	14,967	3,861	3,362	253	213
% Found Employed in Fla.	74.80%	67.80%	57.40%	64.80%	62.80%	58.10%	63.80%	55.90%	33.80%	28.50%
Total Working Full Quarter	3,736	3,578	5,750	10,443	11,352	12,471	3,199	2,934	215	185
% Found, Working Full Qtr.	80.20%	85.10%	47.30%	76.30%	70.30%	83.30%	82.80%	86.70%	84.90%	86.80%
Total Found Continuing Ed.	1,366	1,003	15,838	6,274	6,110	3,723	1,011	800	24	20
% Found, Continuing Ed.	21.70%	16.10%	74.80%	29.70%	23.70%	14.40%	16.70%	13.20%	3.20%	2.60%
Total Cont. Ed and Employed	1,092	780	9,175	4,374	3,890	2,701	641	540	18	15
Total Cont. Ed, Not Employed	304	223	6,663	1,900	2,220	1,022	370	260	6	5
Total Found Employed OPM	122	10	120	14	424	21	202	4	36	3
Total Found Empl. by Military	2	4	39	21	18	8	2	-	-	-
Tot Matches with all Sources	5,076	4,476	18,950	15,710	18,763	16,055	4,423	3,660	293	218
% of Total with Match Data	81.50%	72.10%	89.50%	74.40%	72.80%	62.40%	73.10%	60.30%	39.20%	29.10%
Avg Full Quarter Earnings	$ 6,800	$ 8,016	$ 4,656	$ 6,108	$ 5,731	$ 7,707	$ 8,086	$ 9,725	$ 9,544	$ 11,568

The total number of unique persons dropped due to SSN Edits and erroneous reporting. SSN reported with more than one name were excluded from the follow-up.

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AVERAGE FULL QUARTER EARNINGS FOR FLORIDA GRADUATES FOUND WORKING IN FLORIDA

BY LEVEL OF EDUCATION (1990-91 COHORT)

AT THE END OF 4TH QUARTER 1991 AND THE END OF 4TH QUARTER 1994

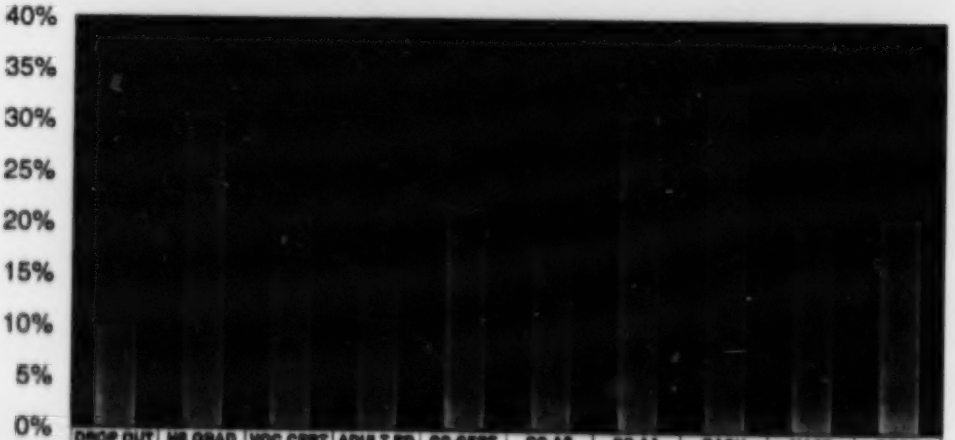
	DROP OUT	HS GRAD	VOC CERT	ADULT ED	CC-CERT	CC-AS	CC-AA	BACH	MAST	DOCT
1991	$3.349	$2.96	$4.585	$5.063	$5.974	$6.8	$4.656	$5.731	$8.086	$9.544
1994	$3.685	$3.884	$5.533	$5.854	$7.266	$8.016	$6.108	$7.707	$9.725	$11.568
INCREASE	$0.336	$0.924	$0.948	$0.791	$1.292	$1.216	$1.452	$1.976	$1.639	$2.025

1991 1994 INCREASE

PERCENT INCREASE IN AVERAGE FULL QUARTER EARNINGS FOR FLORIDA GRADUATES FOUND WORKING IN FLORIDA

BY LEVEL OF EDUCATION (1990-91 COHORT)

FROM THE END OF 4TH QUARTER 1991 TO THE END OF 4TH QUARTER 1994



	DROP OUT	HS GRAD	VOC CERT	ADULT ED	CC-CERT	CC-AS	CC-AA	BACH	MAST	DOCT
% INCREASE	10%	31%	21%	16%	22%	18%	31%	34%	20%	21%

% INCREASE

The AS graduates reported average full quarter earnings of $8016 three years after graduation, compared to the bachelor degree graduates, who averaged $7707. However, the bachelor graduates showed a greater increase in average earnings ($1976) than those with an AS degree ($1216).

It may only be a matter of a year or so before the A.S. graduates average earnings are overtaken by those with bachelor degrees. However, one cannot overlook the meaning of the findings: Florida has strong postsecondary technical training programs that compete in terms of postsecondary education employment earnings to those graduating with university bachelor level degrees.

High school graduates received among the lowest in dollar increases ($924), but among the highest in percent of increase based on initial earnings (31%). It might be encouraging to those who find themselves receiving steady, though small raises. It could mean that some have found vocations that do not require formal education, or it may reflect raises above the minimum wage based on experiences after high school.

Another unexpected finding was that those who completed a certificate at a community college reported higher average earnings than those with an AA degree. At the end of 1991, certificate holders earned $5974 compared to AA recipients average full quarter earnings of $4656. At the end of 1994, certificate holders full quarter average earnings were $7266 compared to AA's full quarter average earnings of $6108.

During the analysis It became apparent that further study is needed to provide more detailed information and understanding. In the three year period, those continuing their education on a full time basis have generally had sufficient time to complete a higher level degree. For instance, by the end of 1993-94, some of the AS

and AA graduates of 90-91 could have completed a bachelor's degree, and some of the bachelor graduates could have completed a Master's degree.

Tables were also prepared from the university program specific outcomes report. This report shows outcomes for university graduates by level. To present an average that was representative the tables did not include majors at the bachelor's and master's level with less than 10 graduates who were found employed for the full quarter. The report strived to include programs with at least three graduates found employed at the Doctoral level, but this was not always possible.

Table Four presents a sample of majors, showing the level of program, the number who graduated, the number and percent found employed in Florida, the number and percent found who worked a full quarter in 1994, and their average earnings. The last column shows the percent of graduates who were able to be matched with data.

This report allows comparisons to be made between majors and for levels of education in the same major. For instance, in general business, 119 out of 202 graduates were found employed in Florida for the full quarter. Two hundred and thirty seven of the 442 graduates at the masters level, but only 2 of the 24 graduates at the doctoral level were found employed in Florida. The average earnings at the bachelor's level was $7,404. At the masters level the earnings increased to $12,879. There was less increase at the doctoral level ($14,244), but with only two persons to make up an average, it may not be representative of all the graduates.

Table Four

SAMPLE OF 1990-91 GRADUATES FROM FLORIDA PUBLIC UNIVERSITIES WITH VALID SSNS
COMPARISON OF AVERAGE WAGES BY LEVEL WITHIN THE SAME PROGRAM
AT THE END OF FOURTH QUARTER 1994

PROGRAM	LVL	GRAD FREQ	EMPLOY IN FLA.	%	FULL QTR EMPLOY	%	FULL QTR AVG EARN	% MATCH
General Business	B	202	135	67%	119	88%	$ 7,404	69%
General Business	M	442	266	60%	237	89%	$ 12,879	62%
General Business	D	24	3	13%	2	67%	$ 14,244	13%
Business Adm/Mgmt	B	1169	693	59%	614	89%	$ 8,303	61%
Business Adm/Mgmt	M	377	196	52%	180	92%	$ 11,768	53%
Business Adm/Mgmt	D	12	2	17%	2	100%	$ 18,796	17%
Communications	B	932	516	55%	419	81%	$ 6,942	58%
Communications	M	71	32	45%	27	84%	$ 9,360	48%
Communications	D	5	2	40%	1	50%	$ 14,177	40%
Computer Science	B	478	263	55%	242	92%	$ 9,697	57%
Computer Science	M	13	4	31%	4	100%	$ 14,740	31%
Computer Science	D	159	58	36%	53	91%	$ 12,459	40%
Special Ed, General	B	148	118	80%	105	89%	$ 6,546	82%
Special Ed, General	M	88	68	77%	58	85%	$ 8,311	78%
Special Ed, General	D	8	2	25%	2	100%	$ 12,658	25%
Elementary Ed	B	2081	1592	77%	1283	81%	$ 6,599	77%
Elementary Ed	M	322	236	73%	204	86%	$ 8,024	75%
Elementary Ed	D							
Civil Engineering	B	241	148	61%	136	92%	$ 9,823	66%
Civil Engineering	M	11	2	18%	2	100%	$ 10,049	18%
Civil Engineering	D	67	24	36%	24	100%	$ 13,188	43%
Electrical Engineer.	B	613	283	46%	251	89%	$ 10,165	52%
Electrical Engineer.	M	181	67	37%	54	81%	$ 12,555	50%
Electrical Engineer.	D	35	5	14%	5	100%	$ 15,951	14%
Nursing, General	B	714	467	65%	400	86%	$ 10,237	68%
Nursing, General	M	127	68	54%	64	94%	$ 11,467	57%
Nursing, General	D	6	3	50%	3	100%	$ 13,027	50%
English	B	776	412	53%	314	76%	$ 6,474	59%
English	M	105	54	51%	39	72%	$ 6,958	67%
English	D	22	6	27%	4	67%	$ 10,399	32%
Mathematics	B	135	72	53%	56	78%	$ 6,706	63%
Mathematics	M	41	15	37%	13	87%	$ 9,900	51%
Mathematics	D	11	2	18%	2	100%	$ 10,500	18%
Chemistry	B	164	64	39%	51	80%	$ 7,256	52%
Chemistry	M	21	7	33%	6	86%	$ 8,473	43%
Chemistry	D	44	10	23%	8	80%	$ 10,961	23%
Psychology	B	1345	726	54%	568	78%	$ 6,322	61%
Psychology	M	88	40	45%	34	85%	$ 7,000	61%
Psychology	D	49	9	18%	7	78%	$ 10,330	20%
Criminal Justice	B	818	487	60%	429	88%	$ 7,175	62%
Criminal Justice	M	22	5	23%	4	80%	$ 9,520	32%
Criminal Justice	D	4	0				-	0%
Social Work	B	261	164	63%	138	84%	$ 6,086	66%
Social Work	M	234	144	62%	119	83%	$ 8,093	62%
Social Work	D	3	0				-	0%

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In comparing the outcome of graduates in general business to English we find that 314 of the 776 graduates at the bachelor's level in English earned an average of $6,474 compared to $7,404 averaged by those who majored in general business. Thirty-nine of 105 graduates at the master's level in English averaged only about $500 more than the bachelor graduates. The average of $6,958 for masters in English was almost half as much as those earning a masters in general business ($12,879).

At the doctoral level, the English majors earnings were closer to the doctoral graduates in business, with the English majors earning an average of $10,399 and the general business majors averaging $14,244.

In Table Five, on the following pages, the sample is listed by degree level and ranked by *average full quarter earnings*. At the high end of the rankingof bachelor degrees we found health related and engineering graduates. Seventeen physician assistants averaged $14,864, 45 physical therapists averaged $12,687, and 38 occupational therapists averaged $12,092. These three groups matched between 60% to 74% of their graduates, indicating that nearly two-thirds remained working in Florida, although not all worked full time during the fourth quarter.

At the low end of the rank, bachelor graduates with average earnings of less than $6,000 were early childhood education, fine art, French, anthropology, and theater majors. The percent match for this group ranged from 43% to 70%.

At the master's level, again, the majors at the top of the rank tended to be health related, engineering and business majors, with the highest of the sample, computer engineering, averaging $15,278. The majors with the lowest rank in average

Table Five

SAMPLE OF 90-91 GRADUATES OF FLORIDA PUBLIC UNIVERSITIES RANKED BY AVERAGE EARNINGS BY LEVEL FOR FOURTH QUARTER 1994

BACHELOR DEGREES	GRAD FREQ	EMPLOY IN FLA.	%	FULL QTR EMPLOY	%	FULL QTR AVG EARN	% MATCH
Physician Assisting	29	18	62%	17	94%	$ 14,864	62%
Physical Therapy	93	56	60%	45	80%	$ 12,687	60%
Occupational Therapy	58	43	74%	38	88%	$ 12,092	74%
Mechanical Engineer.	263	110	42%	95	86%	$ 11,112	47%
Health Care Admin.	74	51	69%	42	82%	$ 10,886	72%
Nursing, General	714	467	65%	400	86%	$ 10,237	68%
Electrical Engineering	613	283	46%	251	89%	$ 10,165	52%
Computer Engineering	92	50	54%	47	94%	$ 10,018	58%
Industrial Engineering	89	39	44%	35	90%	$ 9,989	51%
Engineering Technology	66	37	56%	33	89%	$ 9,866	56%
Civil Engineering	241	148	61%	136	92%	$ 9,823	66%
Building Construction	118	73	62%	64	88%	$ 9,799	64%
Computer Science	478	263	55%	242	92%	$ 9,697	57%
International Bus. Mgmt	187	111	59%	96	86%	$ 9,068	64%
Speech Path-Audiology	65	46	71%	39	85%	$ 8,807	75%
Accounting	1407	949	67%	853	90%	$ 8,642	70%
Business Adm/Mgmt	1169	693	59%	614	89%	$ 8,303	61%
Economics	439	229	52%	192	84%	$ 7,990	56%
Speech Debate	206	117	57%	94	80%	$ 7,875	59%
Public Admin	70	43	61%	41	95%	$ 7,480	69%
General Business	202	135	67%	119	88%	$ 7,404	69%
Ed Mentally Handicap	92	71	77%	59	83%	$ 7,404	78%
Social Sciences, Gen.	265	162	61%	134	83%	$ 7,300	64%
Chemistry	164	64	39%	51	80%	$ 7,256	52%
Political Science	905	445	49%	366	82%	$ 7,209	55%
Biology	381	118	31%	101	86%	$ 7,205	51%
Criminal Justice Studies	818	487	60%	429	88%	$ 7,175	62%
Hospitality Management	417	211	51%	173	82%	$ 7,083	52%
Emotionally Disturbed	113	89	79%	66	74%	$ 7,082	80%
Architecture	144	70	49%	63	90%	$ 7,042	51%
Microbiology	90	33	37%	25	76%	$ 7,017	61%
Liberal Arts	426	259	61%	214	83%	$ 6,951	65%
General Communications	932	516	55%	419	81%	$ 6,942	58%
Phys Ed (some not Cert)	412	263	64%	207	79%	$ 6,898	68%
Geography	88	40	45%	33	83%	$ 6,851	51%
Social Studies Ed	134	101	75%	80	79%	$ 6,833	77%
English Ed	178	126	71%	93	74%	$ 6,780	73%
Journalism	270	155	57%	127	82%	$ 6,744	61%
Mathematics	135	72	53%	56	78%	$ 6,706	63%
Elementary Ed	2081	1592	77%	1283	81%	$ 6,599	77%
Sociology	319	194	61%	160	82%	$ 6,596	66%
Special Ed, General	148	118	80%	105	89%	$ 6,546	82%
International Relations	235	97	41%	74	76%	$ 6,514	46%
Interior Design	129	65	50%	50	77%	$ 6,506	54%
English, General	776	412	53%	314	76%	$ 6,474	59%
Math Ed	142	108	76%	90	83%	$ 6,398	79%
History	364	178	49%	129	72%	$ 6,359	56%
Legal Assisting	101	62	61%	54	87%	$ 6,332	66%
Psychology, General	1345	726	54%	568	78%	$ 6,322	61%
Clothing Prod/Merch.	117	66	56%	51	77%	$ 6,305	56%
Leisure Services	146	83	57%	70	84%	$ 6,216	58%
Social Work, General	261	164	63%	138	84%	$ 6,086	66%
Early Childhood Ed	135	94	70%	82	87%	$ 5,659	70%
Fine Art	290	156	54%	113	72%	$ 5,606	59%
Anthropology	102	42	41%	30	71%	$ 5,432	47%
Theatre	100	41	41%	25	61%	$ 5,021	43%

Table Five, Continued
SAMPLE OF 90-91 GRADUATES OF FLORIDA PUBLIC UNIVERSITIES
RANKED BY AVERAGE EARNINGS BY LEVEL FOR FOURTH QUARTER 1994

MASTER'S DEGREES	GRAD FREQ	EMPLOY IN FLA.	%	FULL QTR EMPLOY	%	FULL QTR AVG EARN	% MATCH
Computer Engineering	52	23	44%	21	91%	$ 15,278	46%
Health Care Admin.	24	12	50%	10	83%	$ 15,277	50%
General Business	442	266	60%	237	89%	$ 12,879	62%
Electrical Engineering	181	67	37%	54	81%	$ 12,555	50%
Business Adm/Mgmt	377	196	52%	180	92%	$ 11,768	53%
Environmntl Health Eng.	31	15	48%	13	87%	$ 11,589	52%
Nursing, General	127	68	54%	64	94%	$ 11,467	57%
Urban Education	16	14	88%	14	100%	$ 10,825	88%
Public Administration	178	109	61%	104	95%	$ 10,073	62%
Mathematics	41	15	37%	13	87%	$ 9,900	51%
Speech Path/Audiology	79	44	56%	34	77%	$ 9,809	57%
General Communications	71	32	45%	27	84%	$ 9,360	48%
Political Science	45	13	29%	13	100%	$ 9,066	36%
Health Science	44	32	73%	27	84%	$ 8,767	73%
Art Education	34	26	76%	23	88%	$ 8,623	76%
Special Ed, General	88	68	77%	58	85%	$ 8,311	78%
Math Education	42	34	81%	30	88%	$ 8,280	81%
Social Work, General	234	144	62%	119	83%	$ 8,093	62%
Elementary Ed	322	236	73%	204	86%	$ 8,024	75%
Library Science	166	97	58%	84	87%	$ 7,443	60%
Biology, General	28	16	57%	15	94%	$ 7,245	64%
Vocational Rehab	57	38	67%	29	76%	$ 7,109	74%
Psychology, General	88	40	45%	34	85%	$ 7,000	61%
English, General	105	54	51%	39	72%	$ 6,958	67%
History	43	19	44%	16	84%	$ 6,590	53%
Gerontology	17	13	76%	11	85%	$ 6,311	76%
Fine Art	33	14	42%	10	71%	$ 5,041	45%
DOCTORATE DEGREES							
Electrical Engineering	35	5	14%	5	100%	$ 15,951	14%
Ed Leadership/Admin.	31	21	68%	21	100%	$ 14,914	71%
Civil Engineering	67	24	36%	24	100%	$ 13,188	43%
Nursing, General	6	3	50%	3	100%	$ 13,027	50%
Computer Science	159	58	36%	53	91%	$ 12,459	40%
Curriculum and Instruct.	57	36	63%	29	81%	$ 12,405	65%
Adult/Cont. Ed	10	6	60%	6	100%	$ 12,128	60%
Ecomonics	20	3	15%	3	100%	$ 11,596	15%
Medical Sciences	26	6	23%	5	83%	$ 11,448	27%
Chemistry	44	10	23%	8	80%	$ 10,961	23%
Sociology	9	5	56%	4	80%	$ 10,718	56%
English, General	22	6	27%	4	67%	$ 10,399	32%
Psychology, General	49	9	18%	7	78%	$ 10,330	20%
Humanities	12	3	25%	3	100%	$ 7,946	25%
PROFESSIONAL DEGREES							
Dentistry, General	69	35	51%	29	83%	$ 15,611	51%
Medicine, General	194	62	32%	56	90%	$ 14,922	32%
Law	632	444	70%	408	92%	$ 12,586	71%
Vet Medicine	70	30	43%	26	87%	$ 11,949	46%

earnings were fine art ($5041), gerontology ($6311), history ($6590), and English ($6958).

The number who graduated and the percent matched of master graduates tended to be lower than the numbers of graduates and matches found at the bachelor's level. This could be due to migration or that the master's students are pursuing a doctoral degree and working part time.

At the doctoral level, electrical engineering ranked highest of the samples with an average of $15,951, followed by educational leadership ($14,914). The majors ranking lowest were humanities ($7,946), psychology ($10,330), and English ($10,399). It was interesting that educational majors (60 to 71%), sociology (56%), and nursing majors (50%) showed the highest percent match data and were most apt to be found working full quarter in-state.

Table Six, on the following pages, compares a sample listing of majors at the same level grouped by discipline. For instance, in education, the range of average earnings for bachelor degrees was close; from $8718 for vocational education to $5659 for those majoring in early childhood education. The majority of majors in education were in elementary education, whose average quarterly earnings were in the mid-range, at $6599.

A much broader range of average earnings was found in the health professions. Seventeen physician assisting majors averaged $14,864, while 400 nursing majors averaged $10,237, seven respiratory therapists averaged $8,255, and 24 dietetics/nutrition majors averaged $6183.

Table Six
SAMPLE OF 90-91 GRADUATES OF FLORIDA PUBLIC UNIVERSITIES
RANKED BY AVERAGE EARNINGS BY LEVEL FOR FOURTH QUARTER 1994
COMPARISON OF PROGRAMS WITHIN DISCIPLINES

PROGRAM	GRAD FREQ	EMPLOY IN FLA.	%	FULL QTR EMPLOY	%		FULL QTR AVG EARN	% MATCH
BACHELOR DEGREES								
BUSINESS								
International Bus. Mgmt	187	111	59%	96	86%	$	9,068	64%
Accounting	1407	949	67%	853	90%	$	8,642	70%
Business Adm/Mgmt	1169	693	59%	614	89%	$	8,303	61%
General Business	202	135	67%	119	88%	$	7,404	69%
Hospitality Management	417	211	51%	173	82%	$	7,083	52%
EDUCATION								
Trade & Voc Ed	67	39	58%	35	90%	$	8,718	61%
Emotionally Disturbed	113	89	79%	66	74%	$	7,082	80%
Phys Ed (some not Cert)	412	263	64%	207	79%	$	6,898	68%
Social Studies Ed	134	101	75%	80	79%	$	6,833	77%
English Ed	178	126	71%	93	74%	$	6,780	73%
Art Ed	40	27	68%	23	85%	$	6,750	73%
Elementary Ed	2081	1592	77%	1283	81%	$	6,599	77%
Science Ed	61	49	80%	38	78%	$	6,595	82%
Special Ed, General	148	118	80%	105	89%	$	6,546	82%
Math Ed	142	108	76%	90	83%	$	6,398	79%
Early Childhood Ed	135	94	70%	82	87%	$	5,659	70%
ENGINEERING & ENG TECH								
Mechanical Engineer.	263	110	42%	95	86%	$	11,112	47%
Industrial Technology	48	33	69%	26	79%	$	10,285	69%
Electrical Engineering	613	283	46%	251	89%	$	10,165	52%
Computer Engineering	92	50	54%	47	94%	$	10,018	58%
Industrial Engineering	89	39	44%	35	90%	$	9,989	51%
Engineering Technology	66	37	56%	33	89%	$	9,866	56%
Civil Engineering	241	148	61%	136	92%	$	9,823	66%
Building Construction	118	73	62%	64	88%	$	9,799	64%
Aerospace Engineering	64	22	34%	18	82%	$	9,701	45%
Metallurgical Engineer.	59	25	42%	21	84%	$	9,432	53%
Surveying	18	14	78%	13	93%	$	8,546	78%
HEALTH RELATED								
Physician Assisting	29	18	62%	17	94%	$	14,864	62%
Physical Therapy	93	56	60%	45	80%	$	12,687	60%
Occupational Therapy	58	43	74%	38	88%	$	12,092	74%
Health Care Admin.	74	51	69%	42	82%	$	10,886	72%
Nursing, General	714	467	65%	400	86%	$	10,237	68%
Speech Path-Audiology	65	46	71%	39	85%	$	8,807	75%
Medical Records	24	15	63%	13	87%	$	8,270	63%
Dietetics/Nutrition	59	31	53%	24	77%	$	6,183	64%
SOCIAL SCIENCES								
Economics	439	229	52%	192	84%	$	7,990	56%
Social Sciences, Gen.	265	162	61%	134	83%	$	7,300	64%
Political Science	905	445	49%	366	82%	$	7,209	55%
Sociology	319	194	61%	160	82%	$	6,596	66%
International Relations	235	97	41%	74	76%	$	6,514	40%
History	364	178	49%	129	72%	$	6,359	56%
Anthropology	102	42	41%	30	71%	$	5,432	47%

Table Six, Continued
SAMPLE OF 90-91 GRADUATES OF FLORIDA PUBLIC UNIVERSITIES
RANKED BY AVERAGE EARNINGS BY LEVEL FOR FOURTH QUARTER 1994
COMPARISON OF PROGRAMS WITHIN DISCIPLINES

PROGRAM	GRAD FREQ	EMPLOY IN FLA.	%	FULL QTR EMPLOY	%	FULL QTR AVG EARN	% MATCH
MASTERS DEGREES							
BUSINESS							
General Business	442	266	60%	237	89%	$ 12,879	62%
Business Adm/Mgmt	377	196	52%	180	92%	$ 11,768	53%
EDUCATION							
Special Ed, General	88	68	77%	58	85%	$ 8,311	78%
Elementary Ed	322	236	73%	204	86%	$ 8,024	75%
Urban Education	16	14	88%	14	100%	$ 10,825	88%
Art Education	34	26	76%	23	88%	$ 8,623	76%
Math Education	42	34	81%	30	88%	$ 8,280	81%
ENGINEERING							
Computer Engineering	52	23	44%	21	91%	$ 15,278	46%
Electrical Engineering	181	67	37%	54	81%	$ 12,555	50%
Environmntl Health Eng.	31	15	48%	13	87%	$ 11,589	52%
HEALTH RELATED							
Vocational Rehab	57	38	67%	29	76%	$ 7,109	74%
Speech Path/Audiology	79	44	56%	34	77%	$ 9,809	57%
Health Care Admin.	24	12	50%	10	83%	$ 15,277	50%
Health Science	44	32	73%	27	84%	$ 8,767	73%
Nursing, General	127	68	54%	64	94%	$ 11,467	57%
DOCTORAL DEGREES							
EDUCATION							
Ed Leadership/Admin.	31	21	68%	21	100%	$ 14,914	71%
Curriculum and Instruct.	57	36	63%	29	81%	$ 12,405	65%
Adult/Cont. Ed	10	6	60%	6	100%	$ 12,128	60%
ENGINEERING							
Electrical Engineering	35	5	14%	5	100%	$ 15,951	14%
Civil Engineering	67	24	36%	24	100%	$ 13,188	43%
PROFESSIONAL DEGREES							
Dentistry, General	69	35	51%	29	83%	$ 15,611	51%
Medicine, General	194	62	32%	56	90%	$ 14,922	32%
Law	632	444	70%	408	92%	$ 12,586	71%
Vet Medicine	70	30	43%	26	87%	$ 11,949	46%

Step 7. Identify Issues for further study

In the course of reading meaning into the data, we realized the need to delve into more detail. We want to run the data again and select only those who did not attain a higher degree during the three year interim (or further years) so that like comparisons can be made. The numbers and percents that *do continue* their education and *complete* higher levels will provide interesting longitudinal data seperately.

We would also want to run new sets of data, based on the updated level of education attained since the previous graduation level in 1990-91. This would help us understand how these students progressed in their pursuit of education. It would also be interesting to find out if those with a higher degree went back and completed a lower level degree, perhaps for technical skills updating. For example, how many graduates with a Bachelor's degree in Liberal Arts follow with a certificate in a vocational area?

In addition to computing the average earnings, we would run data that would calculate the *median earnings* for each cohort in addition to the fulltime-full quarter average comparison.

And finally, we would run additional outcome data for levels below the four year degree. This would allow a comparison of the average earnings in specific fields, such as computer science or law enforcement, from the certificate level through the highest level possible.

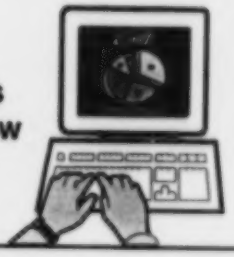
STEP SEVEN
FURTHER STUDY

1. Rerun data for only those who did not continue education beyond designated degree for cleanest comparison.

2. Determine and run new sets of data at the highest level each cohort attained since 90-91.

3. Determine median wages.

4. Compare levels for specific fields such as computer science and law enforcement below the bachelor's level also.



Conclusion: How others can benefit

This study has tried to present a sampling of information possible from data derived from these two FETPIP report formats. The follow-up of graduates has been particularly informative for those interested in accountability reports, for those required to document placement of graduates, and for occupational forecasting. It has shown evidence that education pays - both for the worker in increased earnings and also for the State in decreased public assistance levels. Workforce developers can take heart in the strong earnings shown for those with technical skills, (competitive, even if only during the first few years), as compared with those earning bachelor degrees. This finding of information should be of value to parents, employers, counselors and students alike.